

## Five Year Review Report

**First Five Year Review Report  
for  
Butterworth Landfill Superfund Site  
Grand Rapids, Michigan  
Kent County**

**September 2004**

**PREPARED BY:**

**United States Environmental Protection Agency  
Region 5  
Chicago, Illinois**

**Approved By:**

**Date:**

Richard C. Karl, Director  
Superfund Division

9-23-04

## **Executive Summary**

The remedy for the Butterworth Landfill site in Grand Rapids, Michigan, included the installation of a State of Michigan Act 641 solid waste cap, the establishment of Alternate Concentration Levels (ACLs) for contaminated groundwater, and groundwater, surface water and river sediments monitoring.

This remedy was amended by an Explanation of Significant Differences (ESD), signed by the Region on October 23, 1998, and subsequently amended on December 24, 1998. The ESD established State of Michigan developed groundwater/surface water interface criteria as the ACLs for the site, replacing the process outlined in the Record of Decision (ROD). The ESD also changed the capping requirements over a portion of the site from the Act 641 solid waste cap to a 12 inch soil cover.

The site achieved construction completion with the signing of the Preliminary Closeout Report on September 26, 2000. The trigger for this five year review was the actual start of on-site remedy construction, which was June 14, 1999.

The assessment of this five year review found that the remedy was constructed in accordance with the requirements contained in the ROD and the ESD. The remedy is functioning as designed. Immediate threats have been addressed and the remedy is protective of human health and the environment.

## Five-Year Review Summary Form

SITE IDENTIFICATION		
Site name ( <i>from WasteLAN</i> ): Butterworth Landfill		
EPA ID ( <i>from WasteLAN</i> ): MID062222997		
Region: 5	State: MI	City/County: Grand Rapids/Kent County
SITE STATUS		
NPL status: <input checked="" type="checkbox"/> Final <input type="checkbox"/> Deleted <input type="checkbox"/> Other (specify)		
Remediation status (choose all that apply): <input type="checkbox"/> Under Construction <input type="checkbox"/> Operating <input checked="" type="checkbox"/> Complete		
Multiple OUs? YES <input checked="" type="checkbox"/> NO	Construction completion date: 09/26/2000	
Has site been put into reuse? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		
REVIEW STATUS		
Lead agency: <input checked="" type="checkbox"/> EPA <input type="checkbox"/> State <input type="checkbox"/> Tribe <input type="checkbox"/> Other Federal Agency		
Author name: Dion Novak		
Author title: Remedial Project Manager	Author affiliation: U. S. EPA, Region 5	
Review period: 03 /01 /2004 to 06 / 2004		
Date(s) of site inspection: 05 /10/2004		
Type of review: <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <span><input checked="" type="checkbox"/> Post-SARA</span> <span><input type="checkbox"/> Pre-SARA</span> <span><input type="checkbox"/> NPL-Removal only</span> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <span><input type="checkbox"/> Non-NPL Remedial Action Site</span> <span><input type="checkbox"/> NPL State/Tribe-lead</span> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <span><input type="checkbox"/> Regional Discretion</span> </div>		
Review number: <input checked="" type="checkbox"/> (first) <input type="checkbox"/> (second) <input type="checkbox"/> 3 (third) <input type="checkbox"/> Other (specify)		
Triggering action: <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <span><input checked="" type="checkbox"/> Actual RA Onsite Construction</span> <span><input type="checkbox"/> Actual RA Start at OU# _____</span> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <span><input type="checkbox"/> Construction Completion</span> <span>Previous Five-Year Review Report</span> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <span><input type="checkbox"/> Other (specify)</span> </div>		
Triggering action date ( <i>from WasteLAN</i> ): 06/14/1999		
Due date ( <i>five years after triggering action date</i> ): 06 /14 /2004		

## **Five Year Review Summary Form (cont'd)**

### **Issues:**

- 1) Exceedances of ammonia in groundwater
- 2) Deed Restrictions

### **Recommendations and Follow-up Actions**

- 1) Further evaluation of ammonia exceedances, including sampling in the Grand River
- 2) Continue landfill cap operation and maintenance
- 3) Complete placement of institutional controls on property

### **Protectiveness Statement**

The remedy is protective of human health and the environment. All threats at the site have been addressed through the construction of the landfill cap, and site perimeter fencing and signage, and the process of implementing institutional controls is partially complete with the recent enactment of the area ordinance for groundwater and will be completed later this year with the recordation of institutional controls in the form of conservation easements and future use restrictions on the property.

Long term effectiveness of the remedial action will continue to be verified through continued groundwater and landfill cap monitoring. Continued monitoring of groundwater, and upcoming sampling of the Grand River ecosystem, will help to determine any potential future actions regarding site groundwater, including current ammonia exceedances. Currently, these exceedances do not impact the protectiveness of the remedial action.

## I. Introduction

The purpose of this five year review is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five Year Review reports. In addition, Five Year review reports identify issues found during the review, if any, and identify recommendations to address them.

The Agency is preparing this Five Year review report pursuant to CERCLA Section 121 and the National Contingency Plan (NCP). CERCLA Section 121 states:

*If the President selects a remedial action that results in any hazardous substances, pollutants or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with Section 104 or 106, the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

The Agency interpreted this requirement further in the NCP; 40 CFR Section 300.430(f)(4)(ii) states:

*If a remedial action is selected that results in hazardous substances, pollutants or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.*

The United States Environmental Protection Agency (EPA) Region 5 conducted the Five Year review of the remedy implemented at the Butterworth Landfill (BL) site in Grand Rapids, Michigan. This review was conducted by the Remedial Project Manager (RPM) for the entire site from February 2004 to May 2004. This report documents the results of that review.

This is the first five year review for the BL site. The triggering action for this statutory review is the initiation of remedial action on June 14, 1999. The five year review is required due to the fact that hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure.

## **II Site Chronology**

12/82 Site placed on National Priorities List  
6/90 Removal action completed for approximately 1100 tons of PCB contaminated soil.  
8/94 Remedial Investigation completed  
9/92 ROD signed calling for Act 641 landfill cap and establishment of ACLs for groundwater  
2/98 Remedial design completed  
5/99 EPA approval of remedial action workplan  
6/99 EPA approval to begin on-site construction  
2/00 Phase 1 construction completed  
9/00 Phase 2 construction completed  
9/00 EPA declares site construction complete  
5/04 Five Year review site inspection

## **III Background**

### ***Physical Characteristics***

The BL site is located in Kent County, in the town of Grand Rapids, Michigan, about one mile southwest of the Grand Rapids downtown area. The site is approximately 180 acres and its approximate boundaries are the Grand River on the south, Interstate 196 on the west, Butterworth Street on the north, and a Consumers Power substation on the east (See Figure 1). A combined storm water outfall crosses the site (See Figure 2). The site is within the 100 year flood plain of the Grand River.

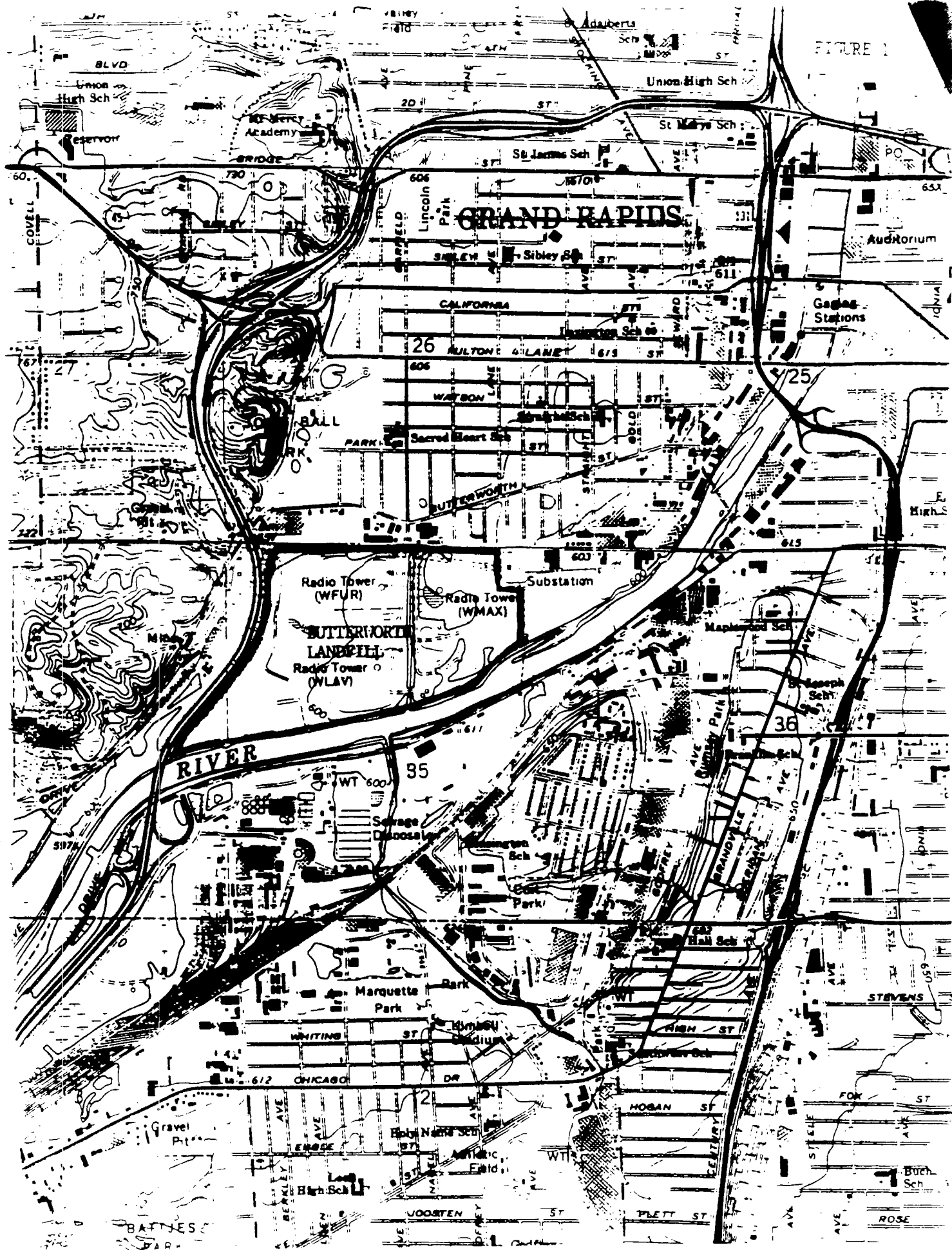
### ***Land and Resource Use***

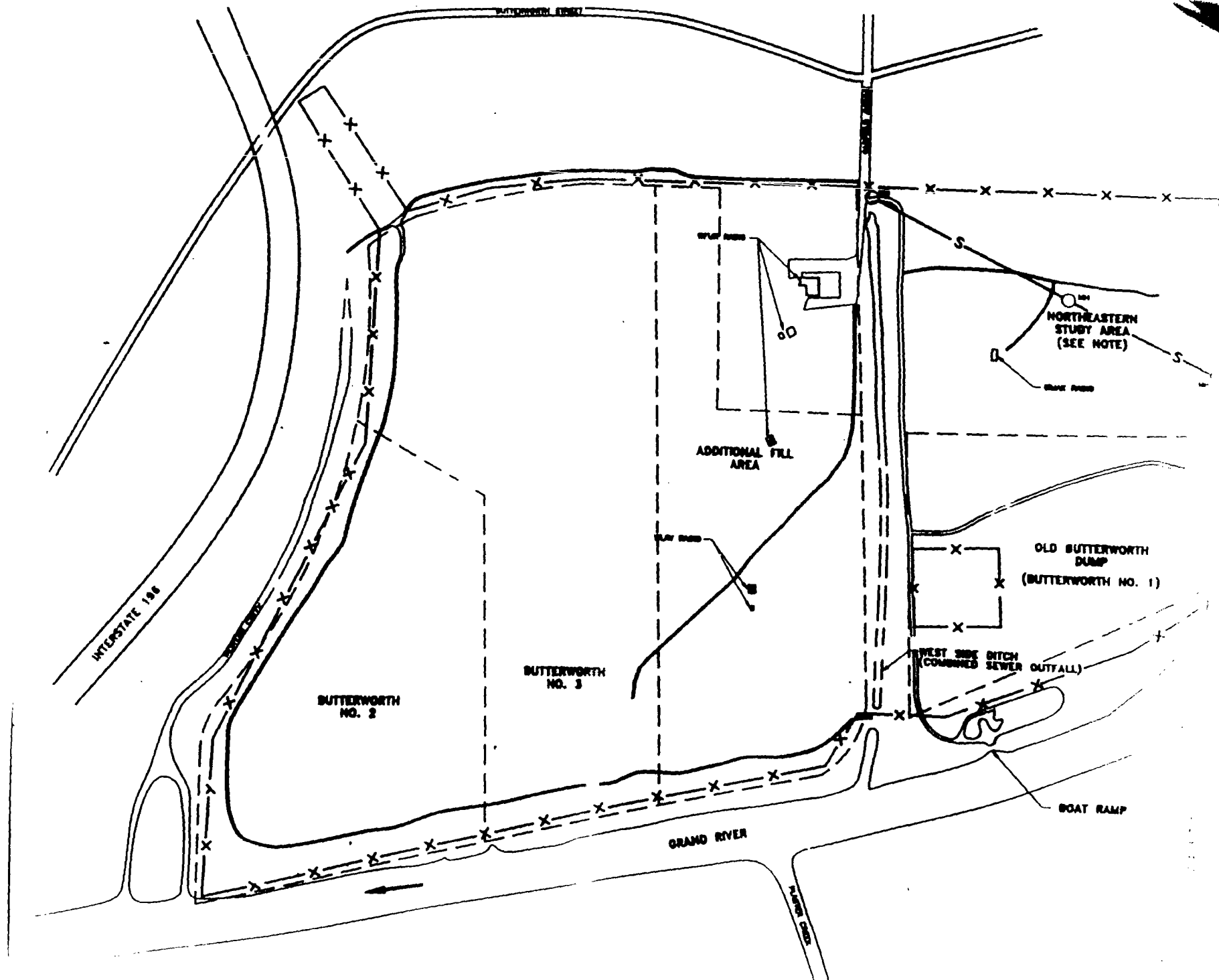
The area immediately surrounding the BL site is predominately industrial. To the west of Interstate 196 are gypsum mining and processing facilities. Metal recycling facilities and the Consumers Power substation are located to the east. Across the Grand River is the Grand Rapids wastewater treatment plant, which is permitted by the State of Michigan to discharge to the Grand River just south of the site. Between Butterworth Street and the landfill site are several light industrial facilities. To the north of Butterworth Street is a residential area, ball park, and a zoo.

### ***History of Contamination***

The BL site was operated by the City of Grand Rapids and was used for both residential and industrial waste. Landfilling was performed in three general areas at the site. Prior to 1967, the area to the east of the storm water outfall was used as a municipal landfill (Old Butterworth Dump or Butterworth #1). This portion of the site was operated as an open landfill where daily cover of refuse was not provided. The refuse was often burned to reduce its volume.

FIGURE 1







After the enactment of Michigan Act 87 in 1965, and consistent with the federal goal of eliminating open dumping, the Old Butterworth Dump was closed around 1967 and a new site, Butterworth Landfill #2 was opened. This new site occupied an area in the southwest corner of the site.

Later, an additional area, Butterworth #3, was opened. The combined size of Butterworth #2 and #3 was about 80 acres. These areas were used by local residents and industries to dispose of waste. In addition, this area was allegedly used to dispose of liquid wastes such as solvents and paint sludges.

The landfill reportedly received municipal solid and industrial wastes, allegedly in drums, which were buried, or simply dumped in liquid form on a working surface. Records indicate that from 1967-1971, about 3000-4000 yards of waste per day were received at the landfill.

### ***Initial Response***

The site was placed on the National Priorities List (NPL) in December, 1982. In 1988, the surface soil/test pit assay conducted during the RI located a hot spot of polychlorinated biphenols (PCBs) at levels of 800 mg/kg and total chromium at levels of 43,000 mg/kg. A removal action was initiated to address this contamination and was completed in June 1990.

In September, 1992, a Record of Decision (ROD) was signed by the Regional Administrator for the site calling for the installation of a State of Michigan Act 641 solid waste cap, the establishment of Alternate Concentration Levels (ACLs) for contaminated groundwater, and groundwater, surface water and river sediment monitoring.

### ***Basis for Taking Action***

#### **Contaminants**

Hazardous substances that have been released at the site in each media include:

#### ***Soil***

Arsenic  
Beryllium  
Chromium  
Polynuclear Aromatic Hydrocarbons  
PCBs  
Dieldrin

## ***Groundwater***

Antimony  
Arsenic  
1,1-dichloroethane  
Vinyl Chloride  
Bis (2-ethylhexyl) phthalate  
Ammonia  
Biological oxygen demand (BOD)

Exposure to soil and groundwater are associated with significant human health risks, due to exceedances of EPA's risk management criteria for either the average or reasonable maximum exposure scenarios. In groundwater, the compounds that caused 95% of the elevated risk levels were antimony, arsenic, 1,1-dichloroethane, vinyl chloride, bis (2-ethyl hexyl) phthalate and PCBs. The contaminants in soil that caused 95% of the elevated risk levels were arsenic, beryllium, chromium, polynuclear aromatic hydrocarbons (PAHs), PCBs and dieldrin.

## **IV Remedial Actions**

### ***Remedy Selection***

The ROD for the BL site was signed on September 29, 1992. The major components of the site remedy include the following:

1. Removal of exposed drums containing hazardous material, substance or waste, and disposal off-site at a permitted Subtitle C disposal facility.
2. Improvement of site capping to meet the Michigan solid waste cap requirements with the inclusion of a frost protection layer (Act 641).
3. Establishment of Alternate Concentration Limits (ACLs) for groundwater
4. Groundwater, surface water and sediment monitoring
5. Institutional controls

### **Remedy Implementation**

The remedy was constructed in two phases. The first phase included the following activities:

- Installation and development of GSI monitoring wells
- Clearing and grubbing of the site

- Sampling of GSI monitoring wells
- Site regrading
- Cap placement on the western side of the combined sewer overflow (CSO) ditch

The second phase included the following activities:

- Cap placement on the eastern side of the CSO ditch
- Continued sampling of GSI monitoring wells
- Placement of a compacted soil layer over the Radio Tower and Station Building (RTSB) area, immediately west of the CSO ditch
- Construction of site access roads
- Installation of site fencing
- Site seeding

The site achieved construction completion status when the PCOR was signed on September 26, 2000.

EPA and the State have determined that all RA construction activities were performed in accordance with specifications. All of the contaminants in groundwater at the site have achieved their respective ACLs, with the exception of ammonia which is discussed below. After all groundwater cleanup levels have been met, EPA will issue a Final Closeout Report.

#### ***System Operation/Operation and Maintenance (O&M)***

Primary activities associated with site O&M include:

Landfill cap maintenance  
 Groundwater monitoring  
 Landfill gas monitoring  
 Surface water controls-control of siltation and erosion of the landfill cap

A chronology of significant events following remedy construction is as follows:

December 2000: EPA approves change in landfill gas monitoring frequency from monthly to weekly

February 2001: On-site excavation to install new radio tower anchor exposes waste-PRPs fix problem - April 2001.

March 2001: MDEQ changes Final Acute Value (FAV) for vinyl chloride to 870 ppb, updating ACL for future GSI monitoring.

January 2002: MDEQ changes FAV for manganese to 19,000 ppb, updating ACL for future GSI monitoring.

February 2002: EPA approves change in landfill gas monitoring frequency from weekly to monthly.

May 2002: City of Grand Rapids passes groundwater ordinance, restricting groundwater usage in site area, required as an institutional control under site consent decree.

September 2002: MDEQ changes FAV for barium to 7,100 ppb, updating ACL for future GSI monitoring.

November 2002: EPA approval to modify sampling program to reduce the analytical requirements for sampling.

March 2003: EPA approves change in landfill gas monitoring frequency from monthly to quarterly.

August 2003: MDEQ clarifies the ACL for BOD as cBOD (FAV remains at 10 ppb)..

September 2003: EPA approval for the reduction in interval sampling for groundwater for a 2 year trial period.

## **V. Progress Since the Last Five Year Review**

This is the first five year review for the site.

## **VI. Five Year Review Process**

### ***Administrative Components***

The five year review team was led by Dion Novak, RPM for the BL site. Scott Cornelius from the MDEQ assisted in the review as the representative for the support Agency.

From February 2004 to June 2004, the review team established the review schedule whose components included:

- Site inspection
- Document Review
- Data Review
- Five Year Review report development and review

### ***Community Involvement***

A press release was sent to the community in December 2003, announcing that the Five Year Review report for the BL site was underway and that a completed review would be available to the public at the site repository at the Grand Rapids Public Library, at EPA Region 5 offices, and online at [www.epa.gov/region5/superfund/fiveyear/fyr\\_index.html](http://www.epa.gov/region5/superfund/fiveyear/fyr_index.html).

### ***Document Review***

This five year review consisted of a review of relevant site documents including the site Record of Decision (Sept 1992), the site Explanation of Significant Differences (Sept 1998), the annual groundwater monitoring reports prepared by the site PRPs, and EPA/PRP correspondence on site technical issues.

### ***Data Review***

#### **Groundwater monitoring**

Groundwater monitoring has been conducted at the site since the start of the RI. Recent groundwater monitoring results are listed in Table 1. These recent results were summarized in a report dated February 2004 entitled "Results for the October 2003 GSI Sampling Event." This data is consistent with previous quarterly sampling results at the site, both for constituents and concentrations. EPA also references a report entitled "Interval Sampling for ACL Compliance Monitoring" dated August 2003, which demonstrated that the data at the site was consistent from one sampling round to the other and that a reduced interval sampling program could provide the data necessary to adequately monitor remedy compliance. This culminated in EPA's decision in September 2003 to modify the interval sampling program, as described above.

#### **Site Inspection**

An inspection at the site was conducted on May 10, 2004 by the RPM, the PRP contractor, representatives of the City of Grand Rapids, and the project manager and geologist from the MDEQ. The purpose of the inspection was to assess the protectiveness of the remedy, including the presence and integrity of site fencing to restrict access, the integrity of the cap, and the condition of monitoring wells.

No significant issues have been identified at any time regarding the landfill cap, the drainage structures, or the site fencing.

TABLE 4

WILLIAMS WORTH LANDFILL  
 PARAMETERS THAT EXCEED ACLs  
 OCTOBER 2003

BEGINNING SEARCH DATE: 01-OCT-2003

ENDING SEARCH DATE: 01-DEC 2003

PARAMETER	UNITS	ACL	SAMPLE IDENTIFIER	SAMPLE DATE	RESULT	DATA FLAGS	EXCEEDANCE
NITROGEN, AMMONIA	MG/L	2	GSI-02A 22-27	23 OCT 2003	75	f	ACL
			GSI-02A 22-27 D	23 OCT 2003	77	f	ACL
			GSI-02A 27-32	23 OCT 2003	69	f	ACL
			GSI-03A 18-22	20-OCT 2003	4		ACL
			GSI-03A 22-27	20-OCT 2003	3.8		ACL
			GSI-03A 22-27 D	20-OCT 2003	3.9		ACL
			GSI-10A 29-34	21 OCT 2003	11		ACL
			GSI-11A 26-31	20 OCT 2003	72		ACL
			GSI-17A 17-20	20 OCT 2003	8		ACL
			GSI-17A 20-25	20 OCT 2003	6.8		ACL
			GSI-19A 24-29	20 OCT 2003	6.3		ACL
			GSI-20A 19-24	21 OCT 2003	25		ACL
			GSI-21A 34-39	21 OCT 2003	27		ACL
			GSI-21A 39-44	21 OCT 2003	28		ACL
			GSI-22A 29-34	18 NOV 2003	29		ACL
			GSI-22A 29-34 D	18 NOV 2003	29		ACL
			GSI-22A 34-39	21 OCT 2003	27		ACL
			GSI-22A 39-44	21 OCT 2003	32		ACL
			GSI-23A 24-29	22-OCT 2003	9.6		ACL
			GSI-23A 29-34	22 OCT 2003	8.1		ACL
			GSI-23A 29-34 D	22 OCT 2003	9		ACL
			GSI-24A 22-27	22 OCT 2003	19		ACL
			GSI-25A 17-22	22 OCT 2003	22		ACL
			GSI-25A 22-27	22 OCT 2003	26		ACL
			GSI-26A 16-19	22 OCT 2003	36		ACL
			GSI-27A 17-20	23 OCT 2003	97	f	ACL
			GSI-27A 25-30	23 OCT 2003	100	f	ACL
			GSI-28A 20-25	22 OCT 2003	55		ACL
			GSI-29A 29-34	21 OCT 2003	11		ACL
			GSI-30A 31-36	20 OCT 2003	42		ACL

TABLE 4

BUTTERWORTH LANDFILL

PARAMETERS THAT EXCEED ACLs

OCTOBER 2003

BEGINNING SEARCH DATE: 01-OCT-2003

ENDING SEARCH DATE: 01-DEC-2003

CHEMICAL PARAMETER	UNITS	ACL	SAMPLE IDENTIFIER	SAMPLE DATE	RESULT	DATA FLAGS	EXCEEDANCE
NITROGEN, AMMONIA	MG/L	2	GSI 31A 25-28	OCT-2003	30		ACL
			GSI 31A 33-38	OCT-2003	28		ACL

## VII Technical Assessment

### Question A: Is the remedy functioning as intended by the decision documents?

The review of documents, ARARs, risk assumptions, and the results of the site inspections indicate that the remedy is functioning as intended by the ROD and ESD. The stabilization and capping of contaminated soils has achieved the remedial action objectives to prevent the direct contact with, or ingestion of contaminants in soil at the site.

Site access is restricted at present with fencing and signage, as required by the ROD. EPA and the PRPs have discussed the preparation of the proper institutional controls (IC's) at the site, as required by the site consent decree. EPA has provided significant comments on the IC's, which will be a deed restriction on the site, and anticipates that the deed restriction will be put in place as early as later this year.

Operation and maintenance of the cap and drainage systems has, on the whole, been effective. All cap remedy components are intact and performing as designed. Methane exceeded performance standards during 2001 at a gas probe at the northwest corner of the site, for which the Remedial Action workplan required more frequent monitoring. An investigation was undertaken to determine the extent of the methane exceedance. This investigation did not definitively determine the reason for the gas exceedance nor did it identify any potential exposure issues, but methane levels at that probe have since decreased below levels of concern and have remained below regulatory levels in subsequent monitoring for the past several years. Quarterly monitoring is required for methane and this continued monitoring will determine if other actions are necessary in the future.

Groundwater exceedances for ammonia have been documented in site sampling of the ACL as set by the 1998 ESD. EPA has been pursuing a remedy of river reallocation to address these exceedances. The MDEQ has identified this exceedance as a significant issue to surface water quality although EPA maintains that the remedy remains protective.

There have been no identified impacts on Grand River ecosystem quality from these groundwater exceedances and the amounts of contamination in the wells are well below the levels that are permitted by the State for discharge from the wastewater treatment plant directly across the River from the site. Additional data shall be collected to determine if there are any significant impacts from the Site to the Grand River. U.S. EPA, in consultation with MDEQ, shall develop a strategy for determining if there are any impacts from the Site on river quality and also any risks associated with the results that can be attributable to the Site.



**Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of remedy selection still valid?**

There have been no changes in the physical conditions of the site that would affect the protectiveness of the remedy.

**Changes in standards and To Be Considereds**

The changes in the ACLs since the issuance of the ESD in the 1998 have been documented above. These include changes in the ACLs for the following parameters: vinyl chloride, manganese, BOD, and barium. These changes will be memorialized in an update to the site ESD as a result of this review.

**Changes in exposure pathways**

There have been no changes in exposure pathways since the ROD was signed.

**Changes in toxicity and other contaminant characteristics**

There have been no changes in contaminant characteristics during this reporting period that would impact remedy protectiveness.

**Changes in risk assessment methods**

There have been no changes in risk assessment methods that would impact remedy protectiveness.

**Expected progress towards meeting RAOs**

The remedy performance is progressing as expected and it is anticipated to continue to do so. All of the groundwater contaminants are below regulatory standards, except for ammonia, although this exceedance does not result in unacceptable risk. Monitoring is following the procedures contained in the remedial action workplan and the site O&M plan.

**Question C: Has any other information come to light that could call into question the protectiveness of the remedy?**

There is no other information that calls into question the protectiveness of the remedy.

**Technical Assessment Summary**

According to the data reviewed and the site inspection, the remedy is functioning as intended by the ROD. There have been no changes in the physical conditions of the site that would impact

the protectiveness of the remedy. As outlined above, landfill gas is no longer an issue as shown by recent monitoring, and EPA has determined that the ammonia exceedances are not significant at present. Additional data from the Grand River ecosystem will be collected to provide additional risk information.

All of the site contaminants being monitored are below regulatory levels established by the site decision documents with the exception of ammonia. There have been no changes in the toxicity factors for the contaminants of concern that were used in the baseline risk assessment, and there have been no changes to the standardized risk assessment methodology that could affect the protectiveness of the remedy. There is no other information that calls into question the protectiveness of the remedy.

Fencing and signage were installed as part of remedy construction and are currently in place at the site and functioning as designed. Deed restrictions have been prepared and should be finalized in the spring of 2004. Site redevelopment is currently under discussion between the City of Grand Rapids and the U.S. EPA. EPA recently approved an extension to an existing bike trail, which will create openings in the site fencing in two places. This will allow recreational use of the site access roads as an extension of the existing bike trail. As part of the approval process, EPA reviewed a qualitative review of risk at the site, reviewed the remedy and potential impacts from this bike trail extension and elicited review and comment from EPA's national coordinators for reuse and the MDEQ and found that this use was acceptable and would have no impacts on the protectiveness of the remedy.

Further discussions regarding reuse are ongoing and any results will be shared in the next five year review.

## VIII Issues

<u>Issue</u>	<u>Currently affects protectiveness(y/n)</u>	<u>Affects future protectiveness(y/n)</u>
Exceedances of ammonia in groundwater	N	N*
Institutional controls	Y**	N

\* Pending receipt of additional Grand River ecosystem sampling

\*\* Anticipated to be recorded later in calendar year 2004

## IX Recommendations and Follow-up actions

<u>Issue</u>	<u>Recommendations/ Follow-up actions</u>	<u>Party Responsible</u>	<u>Milestone Date</u>	<u>Affects Protectiveness (y/n)</u>	
				<u>Current</u>	<u>Future</u>
Ammonia exceedances	Continued monitoring, including Grand River ecosystem sampling	EPA	ongoing	N	N*
Institutional controls	Pursue restriction on property deed	PRPs	Dec 2004	N	Y**

\* Pending receipt of additional Grand River ecosystem sampling

\*\* Anticipated to be in place by years end, obviating any future protectiveness issues

## X Protectiveness Statement

The remedy is protective of human health and the environment. All threats at the site have been addressed through the construction of the landfill cap, and site perimeter fencing and signage, and the process of implementing institutional controls is partially complete with the recent enactment of the area ordinance for groundwater and will be completed later this year with the recordation of institutional controls on the property in the form of conservation easements and future use restrictions.

Long term effectiveness of the remedial action will continue to be verified through continued groundwater and landfill cap monitoring. Continued monitoring of groundwater and sampling in the Grand River ecosystem will help to determine any potential future actions regarding the current ammonia exceedances. Currently, these exceedances do not impact the protectiveness of the remedial action.

## XI Next Review

The next five year review for the BL site is required by September 2009, five years from the date of this review.